Date: Wednesday, 3/7/2007 3:52:56 PM
User: Kim Johnston

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	**Drawing Name**	: BRACKET ASSEMBLY
Job Number	: 31070		
Estimate Number	: 10279		
P.O. Number	: N/A	**Part Number**	: D3121143
This Issue	: 3/7/2007 **S.O. No.** : N/A	**Drawing Number**	: D3121 REV D
Prsht Rev.	: NC	**Project Number**	: N/A
First Issue	: N/A **Type** : MACHINED PARTS	**Drawing Revision**	: D
Previous Run	: 29817	**Material**	: N/A
Written By	:	**Due Date**	: 3/30/2007 **Qty:** 6 **Um:** Each
Checked & Approved By	: 07.03.07		
Comment	: Est Rev:Pick:A 04.02.18 New issue KJ/DS		

Additional Product

Job Number:

Seq. #:	Machine Or Operation:	Description :
1.0	M174B1000X02000	17-4 SS Bar

Comment: Qty.: 0.3864 f(s)/Unit Total : 2.3184 f(s)
Material: 17-4 SS Bar per AMS 5604/5643
(M17-4-B1.000x02.000)
Identify for D3121-113
Batch: M10389

07/03/10

2.0	BAND SAW	BAND SAW

Comment: BAND SAW
Cut blanks: (1.000" x 2.000") 4.425" long

113 mm

07/03/10

3.0	HAAS1	HAAS CNC VERTICAL MACHINING #1

Comment: HAAS CNC VERTICAL MACHINING #1

1-Machine D3121-113 as per Folio FA330 and Dwg D3121
Identify as D3121-113

PO

2-Deburr

3-Scribe batch number

07/03/11 (7)

4.0	QC2	INSPECT PARTS AS THEY COME OFF MACHINE

Comment: INSPECT PARTS AS THEY COME OFF MACHINE

07/03/11 (7)

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: ____ **PAR #:** ____ **Fault Category:** ____ **NCR:** Yes (No) **DQA:** [signature] **Date:** 07/05/03

QA: N/C Closed: ____ **Date:** ____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
			Corrective Action Section B					
DATE	STEP	Description of NC Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date	Verification Section C	Approval Chief Eng	Approval QC Inspector
07/03/11	# 30.	on part holes off by .0015" from bottom. Didn't get light boring made. (Dim. 0.160" is 0.145")	[signature] 05/10/12	Acceptable per attached e-mail.	[signature] 07/03/12	[signature] 07-03-12	[signature] 05/10/12	[signature] 07-03-12

NOTE: Date & initial all entries

H:\fFORMS\Quality Assurance\approved QA\NCRWO RevD

Date: Wednesday, 3/7/2007 3:52:56 PM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services **Drawing Name:** BRACKET ASSEMBLY

Job Number: 31070 **Part Number:** D3121143

Job Number:

Seq. #:	Machine Or Operation:	Description :
5.0	QC8	SECOND CHECK

Comment: SECOND CHECK JA 07.03.12

6.0	D312121	Bolt

Comment: Qty.: 2.0000 Each(s)/Unit Total : 12.0000 Each(s)
Pick:
Qty Part Number Description Batch
2 D3121-21 Bolt B31758 mk 07/04/30 7

7.0	D3121241	Bearing Assembly

Comment: Qty.: 2.0000 Each(s)/Unit Total : 12.0000 Each(s)
Pick:
Qty Part Number Description Batch
2 D3121-241 Bearing Ass B31700 mk 07/04/30 7

8.0	SMALL FAB 1	SMALL & MEDIUM FAB RESOURCE 1

Comment: SMALL & MEDIUM FAB RESOURCE 1
Assemble D3121-143 as per Dwg D3121. mk 07/04/30 7

9.0	QC5	INSPECT WORK TO CURRENT STEP

Comment: INSPECT WORK TO CURRENT STEP Es 07/05/02 (7)

10.0	PACKAGING 1	PACKAGING RESOURCE #1

Comment: PACKAGING RESOURCE #1
Identify and Stock Location: ST233 07/5/2 (7)

11.0	QC21	FINAL INSPECTION/W/O RELEASE

Comment: FINAL INSPECTION/W/O RELEASE (7/7) 07/05/03

Job Completion

07/05/03

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

QA: N/C Closed: _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	31070
Description: Bracket	Part Number:	D3121-113
Inspection Dwg: D3121 **Rev:** D		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

[X] First Article [ ] Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
0.080	+/-0.010	0.080	✓			
0.300	+/-0.010	0.288	✓			
R0.375	+/-0.010	0.375	✓			
1.54	+/-0.030	1.541	✓			
0.350	+/-0.010	0.351	✓			
R0.250	+/-0.010	0.250	✓			
7. 1.800	+/-0.030	1.800	✓	(this measurement with two		is on the sheet twice different tolerances)
Ø0.392	+0.002/-0.000	0.392	✓			
Ø0.201	+0.005/-0.000	0.201	✓			
0.100	+/-0.010	0.100	✓			
X 2.540	+/-0.010	2.542	✓			
X 1.590	+/-0.010	1.590	✓			
Y 0.160	+/-0.010	0.160	✓			
Y 0.400	+/-0.010	0.395	✓			
X 1.220	+/-0.010	1.222	✓			
1.600	+/-0.010	1.601	✓			
3.80	+/-0.030	3.80	✓			
1.800	+/-0.010	1.800	✓			
R0.500	+/-0.010	0.500	✓			
Y 0.130	+/-0.010	0.131	✓			
3.41	+/-0.030	3.400	✓			
3.65	+/-0.030	3.65	✓			
2.24	+/-0.030	2.216	✓			
45°	+/-0.1°	45°	✓			
R0.250	+/-0.010	0.250	✓			
3.97	+/-0.030	3.968	✓			
R0.38	+/-0.030	0.375	✓			
Ø0.392	+0.002/-0.000	0.392	✓			
Ø0.201	+0.005/-0.000	0.201	✓			
0.100	+/-0.010	0.105	✓			
0.268	+/-0.010	0.269	✓			
R0.260	+/-0.010	0.260	✓			
0.080	+/-0.010	0.080	✓			
0.300	+/-0.010	0.300	✓			

DART AEROSPACE LTD	Work Order:	31070
Description: Bracket	Part Number:	D3121-113
Inspection Dwg: D3121 Rev: D		Page 2 of 2

FIRST ARTICLE INSPECTION CHECKLIST

[X] First Article [ ] Prototype

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
⌖ 0.381	+/-0.010	0390	✓			
⌖ 0.201	+/-0.010	0.205	✓			
⌖ 0.580	+/-0.010	0589	✓			
⌖ 0.400	+/-0.010	0.397	✓			
∠ 100°	+/-0.1°	100°	✓			
0.332 ~~0.32~~	+/-0.010	0.032	✓			

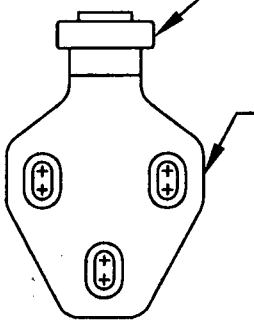
Measured by:		Audited by:	J.F.	Prototype Approval:	N/A
Date:	07/03/10	Date:	07/03/11	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	03.12.08	New Issue P/O D3121-143	KJ/RF	
B	04.05.05	Dimensions changed/re-arranged per Dwg revision	KJ/JLM	
C	06.06.14	Dwg Rev. updated	KJ/JLM	

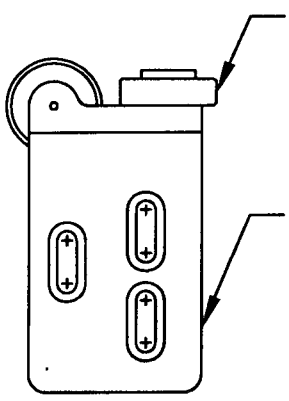
DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO. D3121 — REV. D — SHEET 1 OF 10
DATE 06.05.17		TITLE BRACKET ASSEMBLY — SCALE 1:2

A	02.04.15	NEW ISSUE
B	03.01.16	ADD RIDGES; ADD MAT'L PROP; FIX P/N ADD −141/−143/−144/−145/−146
C	04.02.17	ADD CLEARANCE; USE −241 BEARING
D	06.05.17	D3121−25 CAP WAS 1.024, NOW 1.000

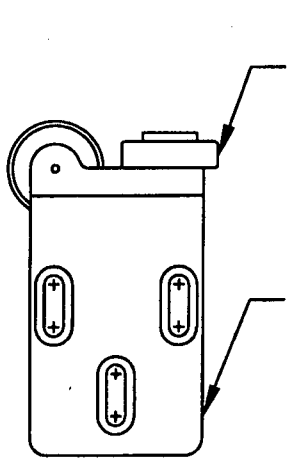
RELEASED
06.06.02



D3121−041 BRACKET ASSEMBLY
(REPLACES PREMIER P/N B30−23000−33)



D3121−043 (SHOWN) / D3121−044 (OPPOSITE) BRACKET ASSEMBLY
(REPLACES PREMIER P/N B30−23000−37/−38)



D3121−045 (SHOWN) / D3121−046 (OPPOSITE) BRACKET ASSEMBLY
(REPLACES PREMIER P/N B30−23000−35/−36)

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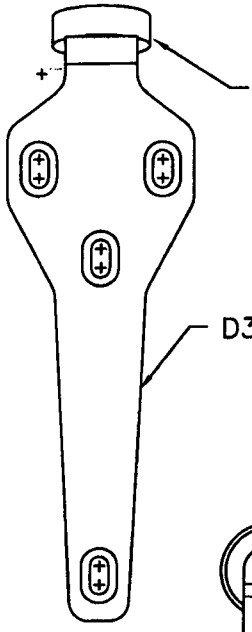
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:2

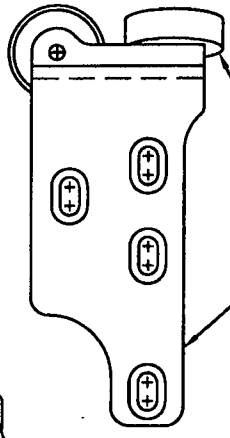


D3121-21 BOLT (1)
D3121-241
BEARING ASSEMBLY (1)

D3121-111 BRACKET

D3121-141 BRACKET ASSEMBLY
(REPLACES PREMIER P/N B30-23001-01)

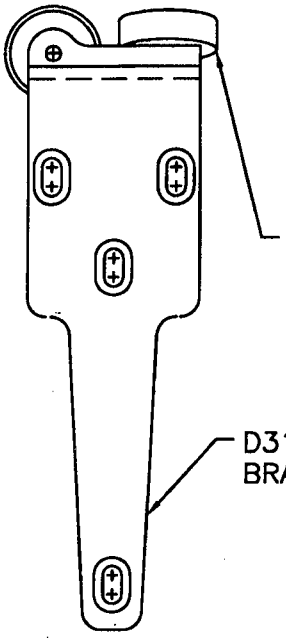
RELEASED
06.06.02



D3121-21 BOLT (1)
D3121-241 BEARING ASSEMBLY (1)
(2 PLACES)

D3121-113/-114 BRACKET

D3121-143 (SHOWN) / D3121-144 (OPPOSITE) BRACKET ASSEMBLY
(REPLACES PREMIER P/N B30-23000-03/-04)



D3121-21 BOLT (1)
D3121-241 BEARING ASSEMBLY (1)
(2 PLACES)

D3121-115/-116
BRACKET

D3121-145 (SHOWN) / D3121-146 (OPPOSITE) BRACKET ASSEMBLY
(REPLACES PREMIER P/N B30-23000-05/-06)

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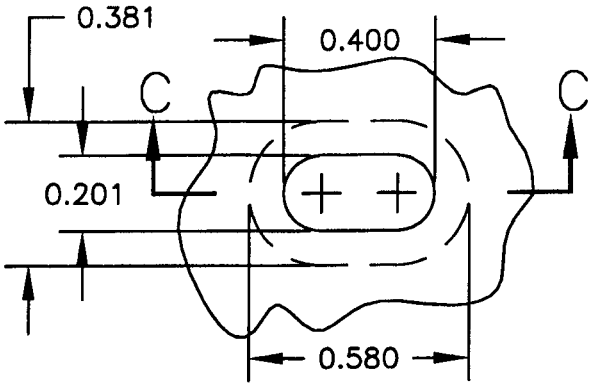
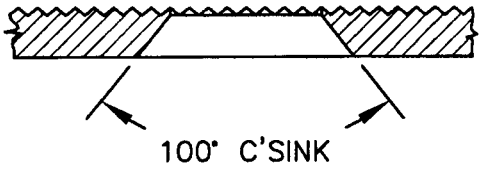
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:1

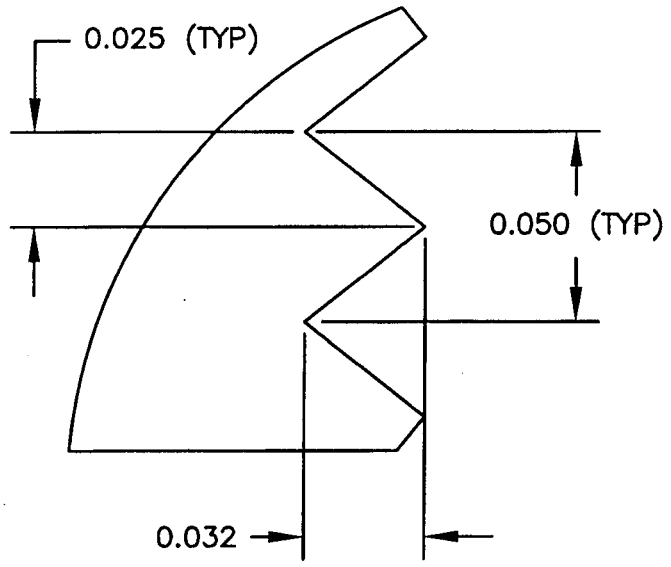
DETAIL A:
SLOT DETAIL
SCALE 2:1
VIEW ROTATED





SECTION C–C

DETAIL B:
RIDGE DETAIL
PARTIAL SECTION
SCALE 1:20



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06.06.02

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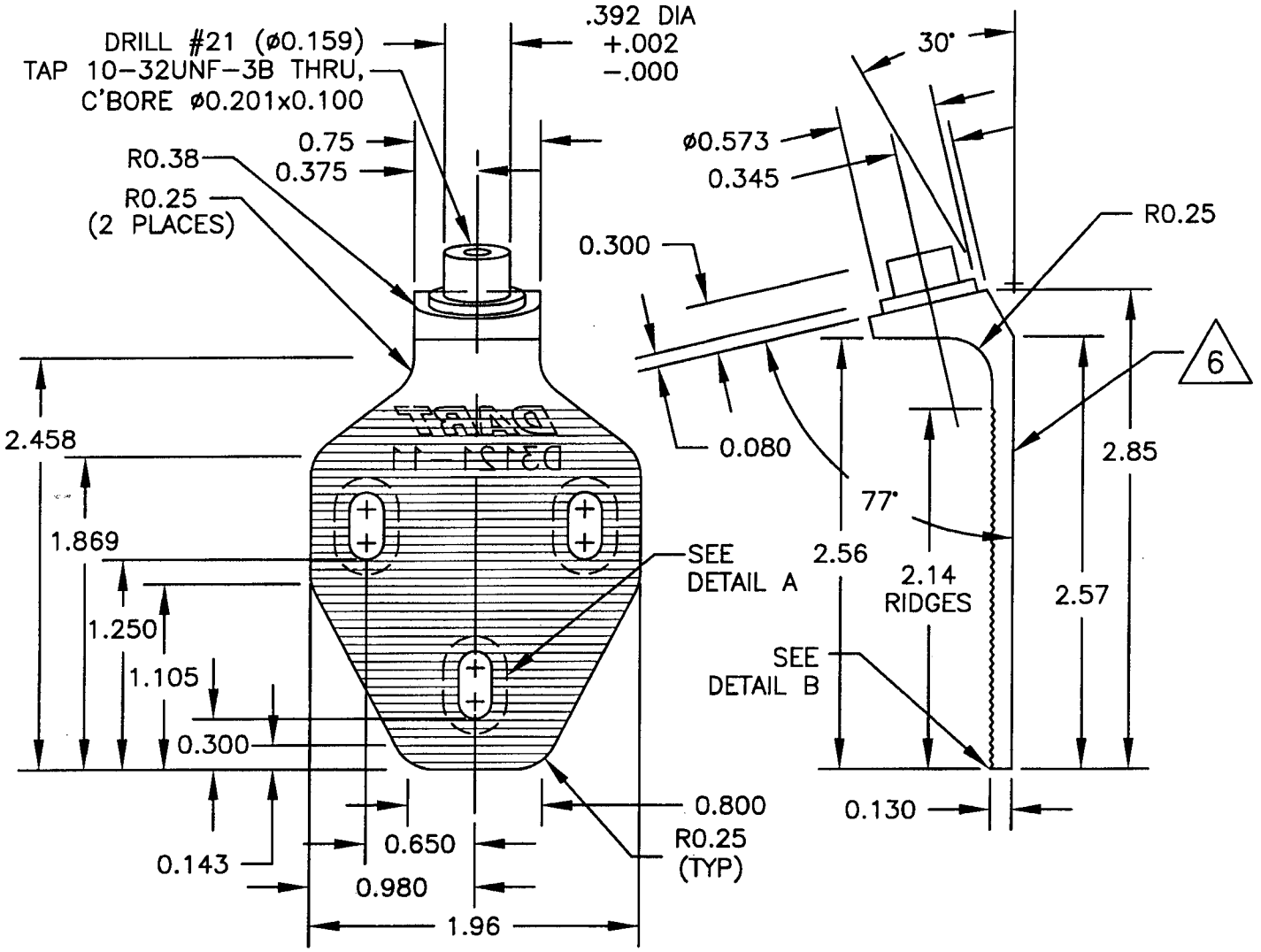
CHECKED	APPROVED	DRAWING NO. D3121	REV. D SHEET 4 OF 10
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:1



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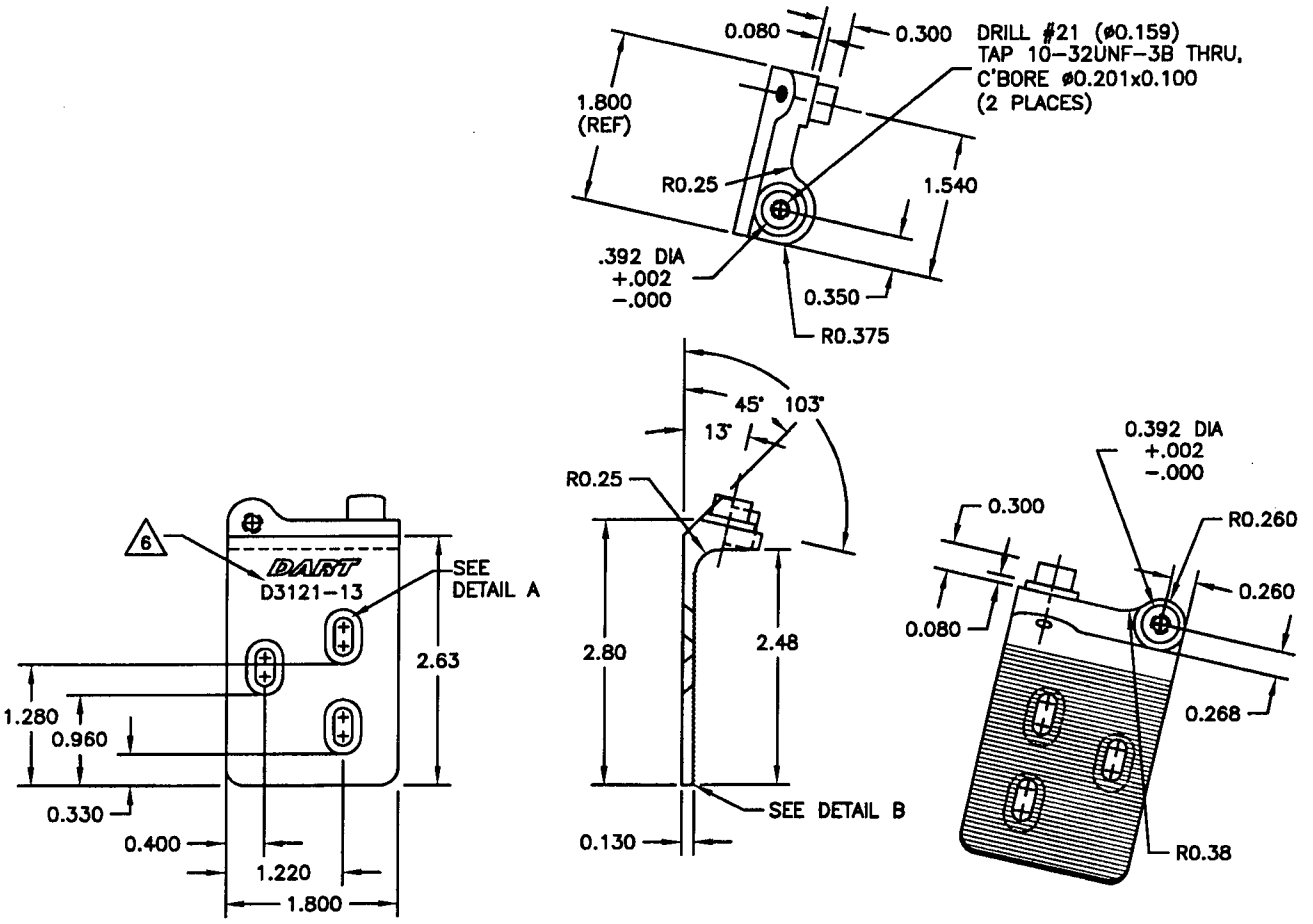
06.06.02

D3121-11 BRACKET

1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
   MIN ULTIMATE TENSILE = 150 ksi
   MIN YIELD TENSILE = 100 ksi
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES
4) BREAK ALL SHARP EDGES 0.005 TO 0.015
5) ENGRAVE DART P/N & LOGO AS SHOWN
6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3121	REV. D SHEET 5 OF 10
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:2



D3121-13 BRACKET (SHOWN)
D3121-14 BRACKET (OPPOSITE)

1) MATERIAL: 17-4 SS PER AMS 5604/5643 (REF DART SPEC. M17-4-B)
   MIN ULTIMATE TENSILE STRENGTH = 150 ksi
   MIN YIELD TENSILE STRENGTH = 100 ksi
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES
4) BREAK ALL SHARP EDGES 0.005 TO 0.015
5) ENGRAVE DART P/N & LOGO AS SHOWN
6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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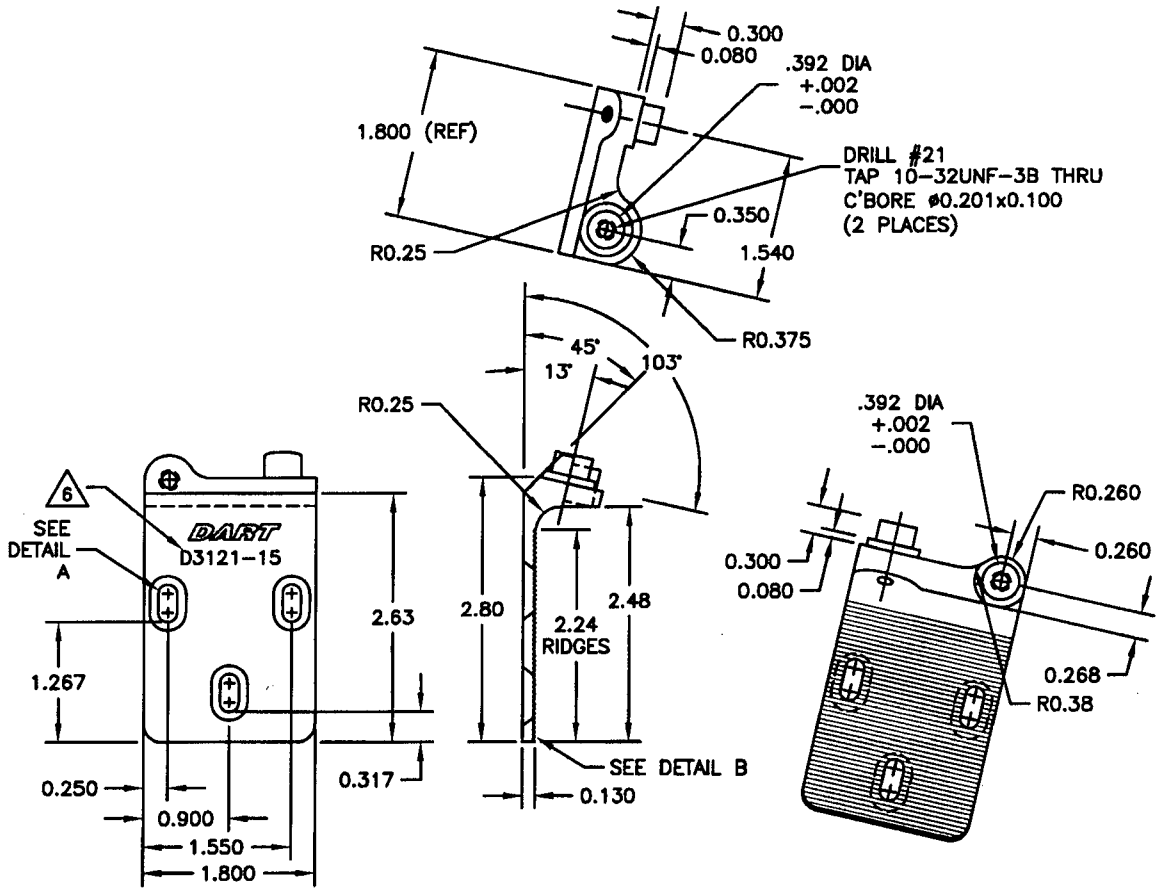
DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3121	REV. D SHEET 6 OF 10
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:2



D3121−15 BRACKET (SHOWN)
D3121−16 BRACKET (OPPOSITE)

1) MATERIAL: 17−4 SS PER AMS 5604/5643 (REF DART SPEC. M17−4−B)
   MIN ULTIMATE TENSILE = 150 ksi
   MIN YIELD TENSILE = 100 ksi
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES
4) BREAK ALL SHARP EDGES 0.005 TO 0.015
5) ENGRAVE DART P/N AND LOGO AS SHOWN
6) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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RELEASED
06.06.02

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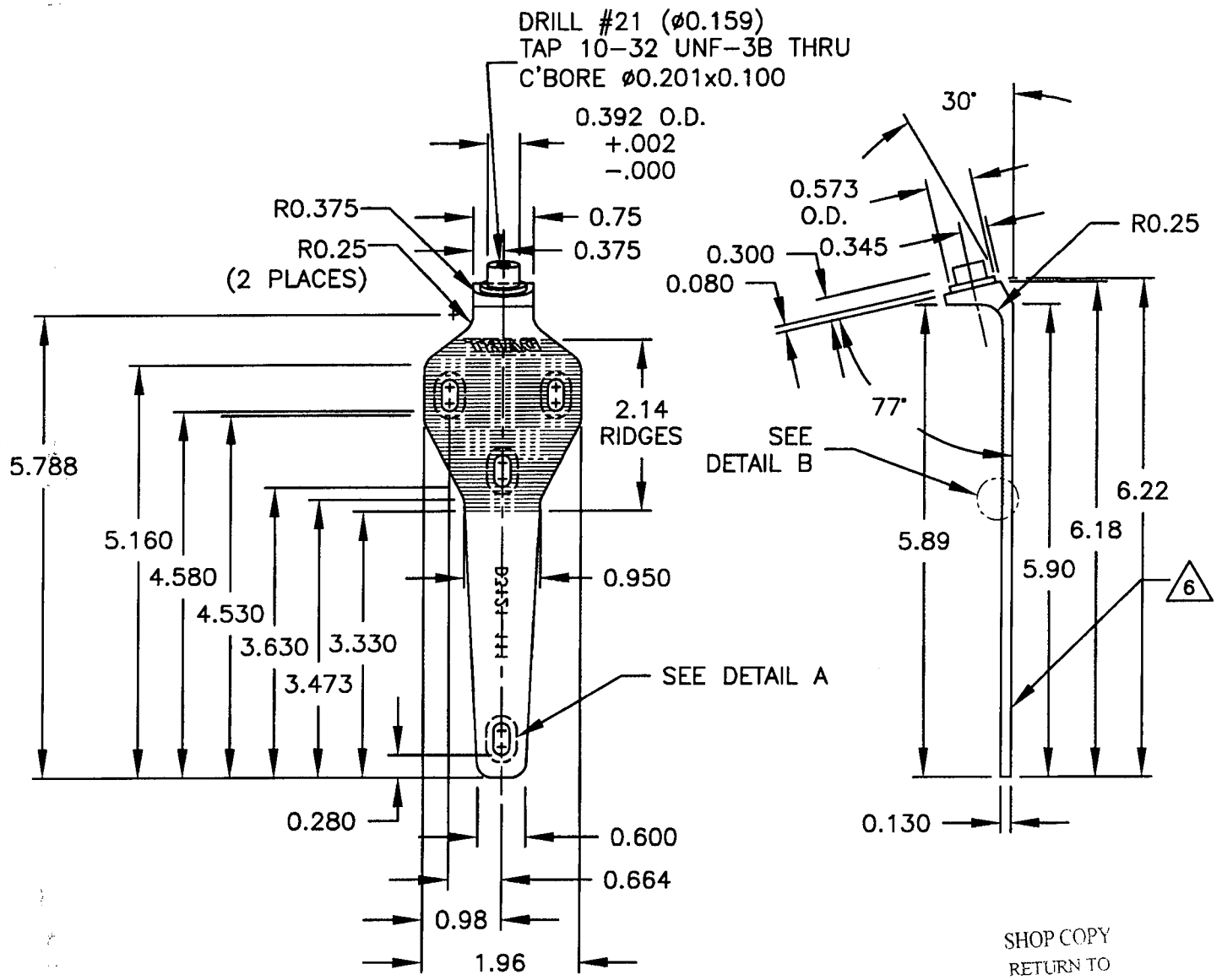
CHECKED	APPROVED	DRAWING NO. D3121	REV. D SHEET 7 OF 10
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:2



D3121–111 BRACKET

1) REPLACES PREMIER P/N B32–23001–11
2) MATERIAL: 17–4 SS PER AMS 5604/5643 (REF DART SPEC. M17–4–B)
   MIN ULTIMATE TENSILE = 150 ksi
   MIN YIELD TENSILE = 100 ksi
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHEWISE NOTED
4) ALL DIMENSIONS ARE IN INCHES
5) BREAK ALL SHARP EDGES 0.005 TO 0.015
6) ENGRAVE DART P/N & LOGO IN AREAS SHOWN
7) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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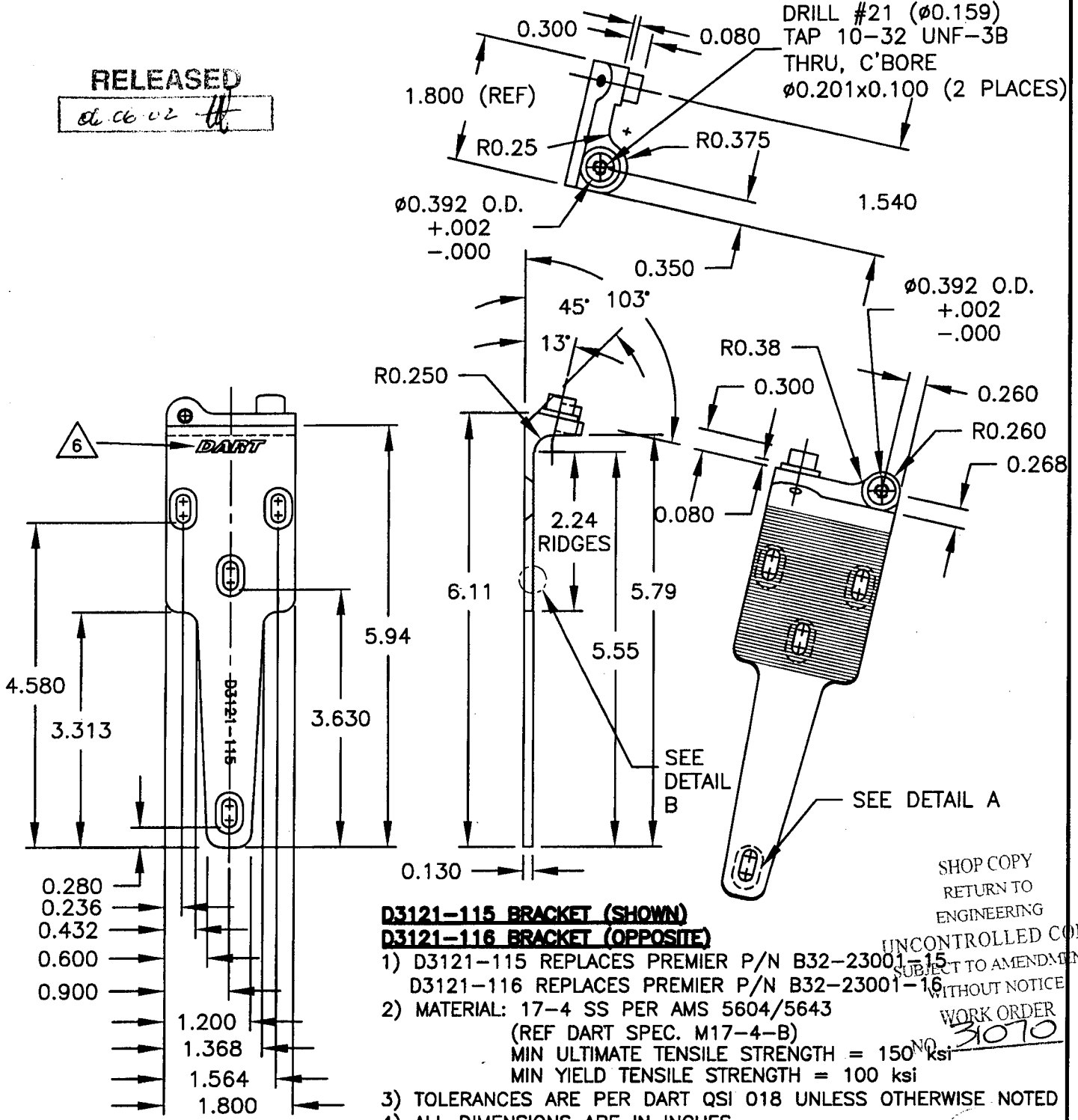
NO. 31070

RELEASED
06.06.02

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3121	REV. C SHEET 9 OF 10
DATE 04.02.18		TITLE BRACKET ASSEMBLY	SCALE 1:2

RELEASED
dd 06 02



D3121-115 BRACKET (SHOWN)
D3121-116 BRACKET (OPPOSITE)

1) D3121-115 REPLACES PREMIER P/N B32-23001-15
   D3121-116 REPLACES PREMIER P/N B32-23001-16
2) MATERIAL: 17-4 SS PER AMS 5604/5643
   (REF DART SPEC. M17-4-B)
   MIN ULTIMATE TENSILE STRENGTH = 150 ksi
   MIN YIELD TENSILE STRENGTH = 100 ksi
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
4) ALL DIMENSIONS ARE IN INCHES
5) BREAK ALL SHARP EDGES 0.005 TO 0.015
6) ENGRAVE DART P/N & LOGO IN AREAS SHOWN
7) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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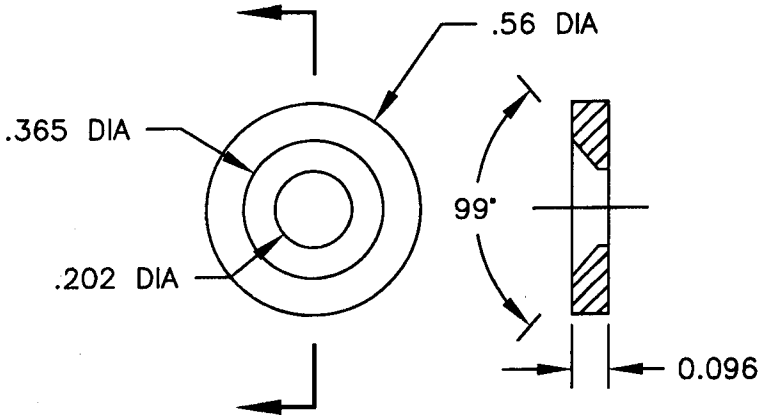
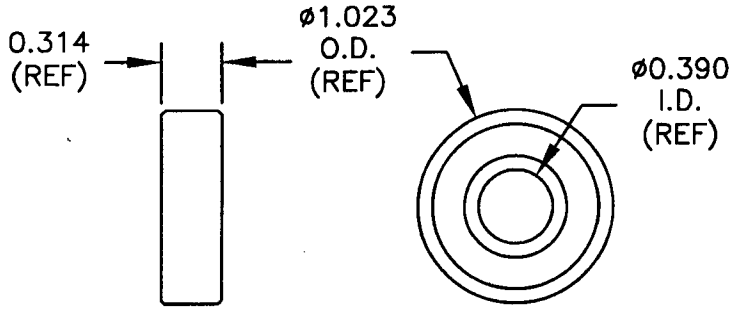
NO. 3070

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3121	REV. D SHEET 10 OF 10
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:1



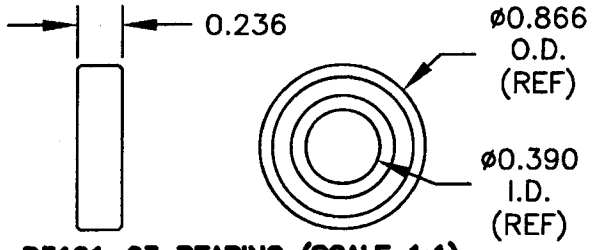
D3121-17 WASHER (SCALE 2:1)

1) REPLACES PREMIER P/N B32-23001-17
2) MATERIAL: AISI 303 SS ROUND BAR, ANNEALED (REF DART SPEC. M303R)
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
4) ALL DIMENSIONS ARE IN INCHES
5) BREAK ALL SHARP EDGES 0.005 TO 0.015



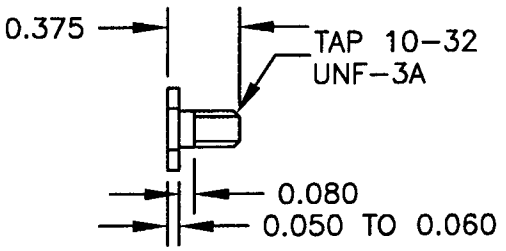
D3121-19 BEARING (SCALE 1:1)

1) POSSIBLE SUPPLIER: KING BEARING P/N 6000-2ZJ/EM FAFNIR P/N 9100KDD
2) ALL DIMENSIONS ARE IN INCHES



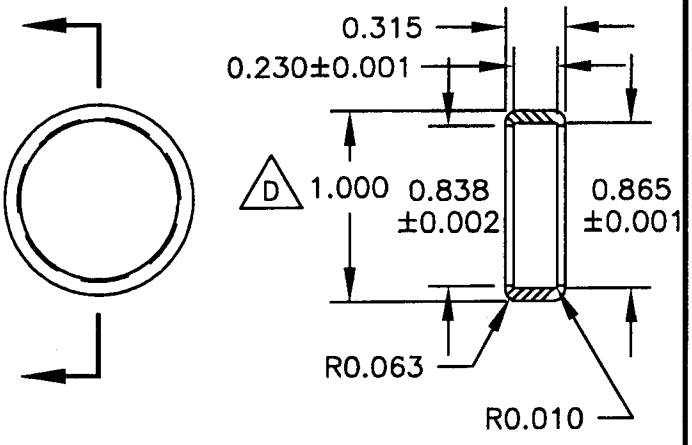
D3121-23 BEARING (SCALE 1:1)

1) POSSIBLE SUPPLIER: SKF P/N 61900-2Z OR KML P/N 6900-ZZ
2) ALL DIMENSIONS ARE IN INCHES



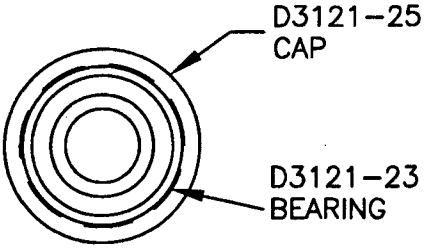
D3121-21 BOLT (SCALE 1:1)

1) MATERIAL: AISI 303 SS HEX, ANNEALED (REF DART SPEC. M303H0.500)
2) FINISH: NONE
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
4) ALL DIMENSIONS ARE IN INCHES
5) BREAK ALL SHARP EDGES 0.005 TO 0.015



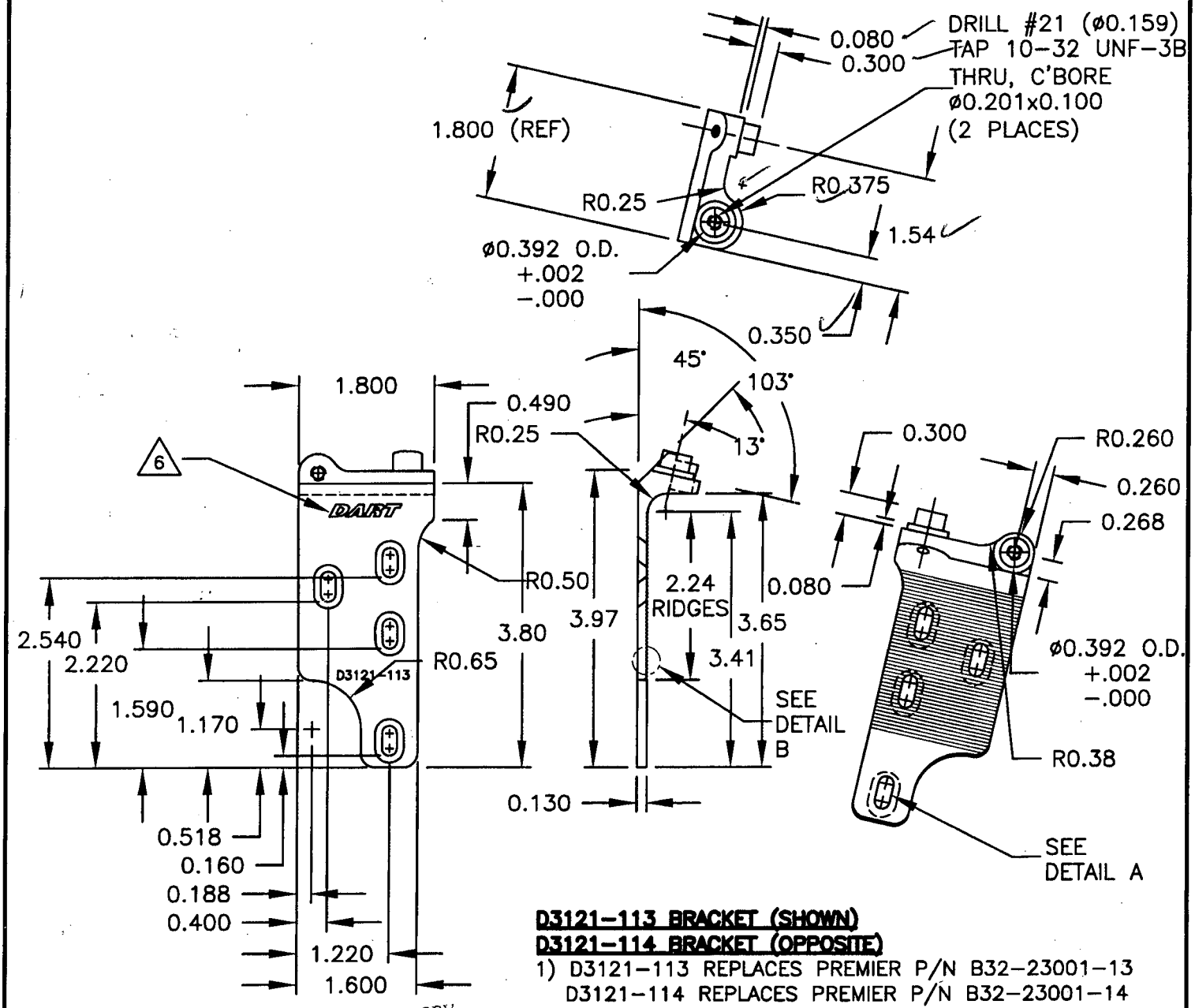
D3121-25 CAP (SCALE 1:1)

1) MATERIAL: DELRIN ROD, ø1.25 (REF DART SPEC. M-DELRIN-R1.250)
2) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
3) ALL DIMENSIONS ARE IN INCHES



D3121-241 BEARING ASSEBLY (SCALE 1:1)

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO. D3121	REV. D SHEET 8 OF 10
DATE 06.05.17		TITLE BRACKET ASSEMBLY	SCALE 1:2



D3121-113 BRACKET (SHOWN)
D3121-114 BRACKET (OPPOSITE)

1) D3121-113 REPLACES PREMIER P/N B32-23001-13
   D3121-114 REPLACES PREMIER P/N B32-23001-14
2) MATERIAL: 17-4 SS PER AMS 5604/5643
   (REF DART SPEC. M17-4-B)
   MIN ULTIMATE TENSILE STRENGTH = 150 ksi
   MIN YIELD TENSILE STRENGTH = 100 ksi
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
4) ALL DIMENSIONS ARE IN INCHES
5) BREAK ALL SHARP EDGES 0.005 TO 0.015
6) ENGRAVE DART P/N & LOGO IN AREAS SHOWN
7) HOLE IN SPIGOT TO BE CONCENTRIC WITHIN 0.005

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WITHOUT NOTICE

RELEASED
06.06.02
WORK ORDER NO. 31010

Jason Murdoch

From: David Shepherd [dshepherd@dartaero.com]
Sent: Monday, March 12, 2007 12:55 PM
To: 'S Shahbazian'; 'Jason Murdoch'
Cc: chrisp@dartaero.com
Subject: RE: D3121-113

Acceptable deviation, as long as the relationship between all holes is per drawing.

David

From: S Shahbazian [mailto:sshahbazian@dartaero.com]
Sent: Monday, March 12, 2007 8:57 AM
To: 'Jason Murdoch'
Cc: 'David Shepherd'; chrisp@dartaero.com
Subject: RE: D3121-113

David,
I think this should be ok what do you think?
Thanks
Serge

From: Jason Murdoch [mailto:jmurdoch@dartaero.com]
Sent: March 12, 2007 8:18 AM
To: 'S Shahbazian'
Cc: 'David Shepherd'; chrisp@dartaero.com
Subject: D3121-113

This was the 1st part. If you look at dwg D3121 pg 8, you'll see the dimension .160" from the bottom of the hole, to the bottom of the part. The actual dimension is .147", resulting in all the holes being moved down by .013" from nominal. Is this going to create an issue?

jmurdoch@dartaero.com
Q.C. COORDINATOR